Abalone Survey in the Estevan Group and Aristazabal Island, June 1985

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by

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ABSTRACT

Farlinger, S. and K. T. Bates. 1986. Abalone survey in the Estevan Group and Aristazabal Island, June 1985. Can. MS Rep. Fish. Aquat. Sci. 1896: 45 p.

Reductions in the commercial abalone fishery quota in recent years have been supported by surveys indicating substantial declines in the index of abalone abundance. In 1985, the Central Coast commercial fishing areas were resurveyed in response to reports of increasing availability of abalone. In 12 out of 25 comparative sites, an increase in density of legal size abalone was observed relative to the 1983 survey. Mean total density increased from 1.43 abalone per square meter in 1983 to 1.57 abalone per square meter in 1985.

A non-significant increase in abalone density was observed in a comparison of new recruits and pre-recruits. The abalone population in the surveyed area does not appear to have decreased since 1983.

RÉSUMÉ

Farlinger, S. and K. T. Bates. 1986. Abalone survey in the Estevan Group and Aristazabal Island, June 1985. Can. MS Rep. Fish. Aquat. Sci. 1896: 45 p.

La réduction au cours des dernières années des contingents pour la pêche commeciale de l'ormeau a été étayée par des relevés indiquant une chute importante de son indice d'abondance. En 1985, les pêcheries commerciales sur la côte centrale ont fait l'objet de nouveaux relevés suite à des rapports signalant un plus grand nombre d'ormeaux. Des 25 sites étudiés, 12 ont montré un accroissement de la densité d'ormeaux de taille légale par rapport au relevé effectué en 1983. La densité totale moyenne ent passee de 1,43 ormeau par m2 en 1983 à 1,57 ormeau par m^2 en 1985.

Un comparaison des nouvelles recrues et des pré-recrues a indiqué une augmentation non significative de la densité. Depuis 1983, la population d'ormeau dans la zone étudiée ne semble pas avoir subi une baisse.

INTRODUCTION

The primary management objectives set by the Department of Fisheries and Oceans (DFO) for the commercial abalone fishery in British Columbia are to provide a sustained fishery governed by sound conservation principles, and to ensure optimal use of the resource. The management strategies have evolved over the years since the fishery began in earnest in the mid-1970s, and presently include a vessel quota supported by a size limit and large area closures.

The vessel quota was implemented in 1979 allowing 10,000 lb (4,536 kg) per licence and was supplemented by an open fishery of 25,000-300,000 lb (11,340 - 136,077 kg) conducted by the licenced vessels. This quota totaling 500,000 lb (226,795 kg) was based on a best estimate of annual production (Breen 1980) and the assumption that some unfished stocks with large size individuals still remained. Protection of smaller vessels and maintenance of the open market were two important driving considerations in choosing the above mechanism for abalone management in British Columbia (Fedorenko and Sprout 1982). As stock estimates were refined, the overall quota was reduced in subsequent years (Breen MS 1983). In the recent past, no further stock estimates have been provided and the quota has continued to decline under the assumption that a sustainable level would be found. These reductions in quota have been supported only by resurveys of commercial and "closed" abalone beds which, until 1985, have consistently indicated substantial declines in the index of abundance (legal size abalone per square meter).

Limited catch sampling has occurred in 1982, 1983, 1984 and 1985 and is considered below.

Since the late 1970s approximately 80% of the abalone fishery in British Columbia has taken place in the North Coast (north of Cape Caution, Fig. 1). Area 6 located in this region has been the major source of commercial abalone landings since 1980 (17.3 - 39.7% of total B.C. landings for 1978 to 1984 respectively). Surveys made in the area in 1983 confirmed fishermen's concerns with a 45-55% decrease in the index of abalone abundance observed since 1979 and 1980 (Boutillier et al. 1984).

In late 1984 and early 1985, information from commercial fishermen and anecdotal information from sport fisherman suggested an increase in the availability of abalone in the Central Coast (Fig. 1). In response to this, a program was planned for June 1985 to resurvey sites examined in 1983. This resurvey was in accordance with recommendations made by the Pacific Biological Station (PBS) scientists in 1983 (Breen MS 1983) and follows a resurvey of areas in the Queen Charlotte Islands in 1984 (Boutillier et al. 1985).

METHODS

The survey was carried out by three divers, two from the Field Services Branch (DFO), and one, a commercial abalone diver. Two of these divers participated in the 1983 survey in the same area. The fishery patrol vessel 'Babine Post' provided the supporting vessel and crew.

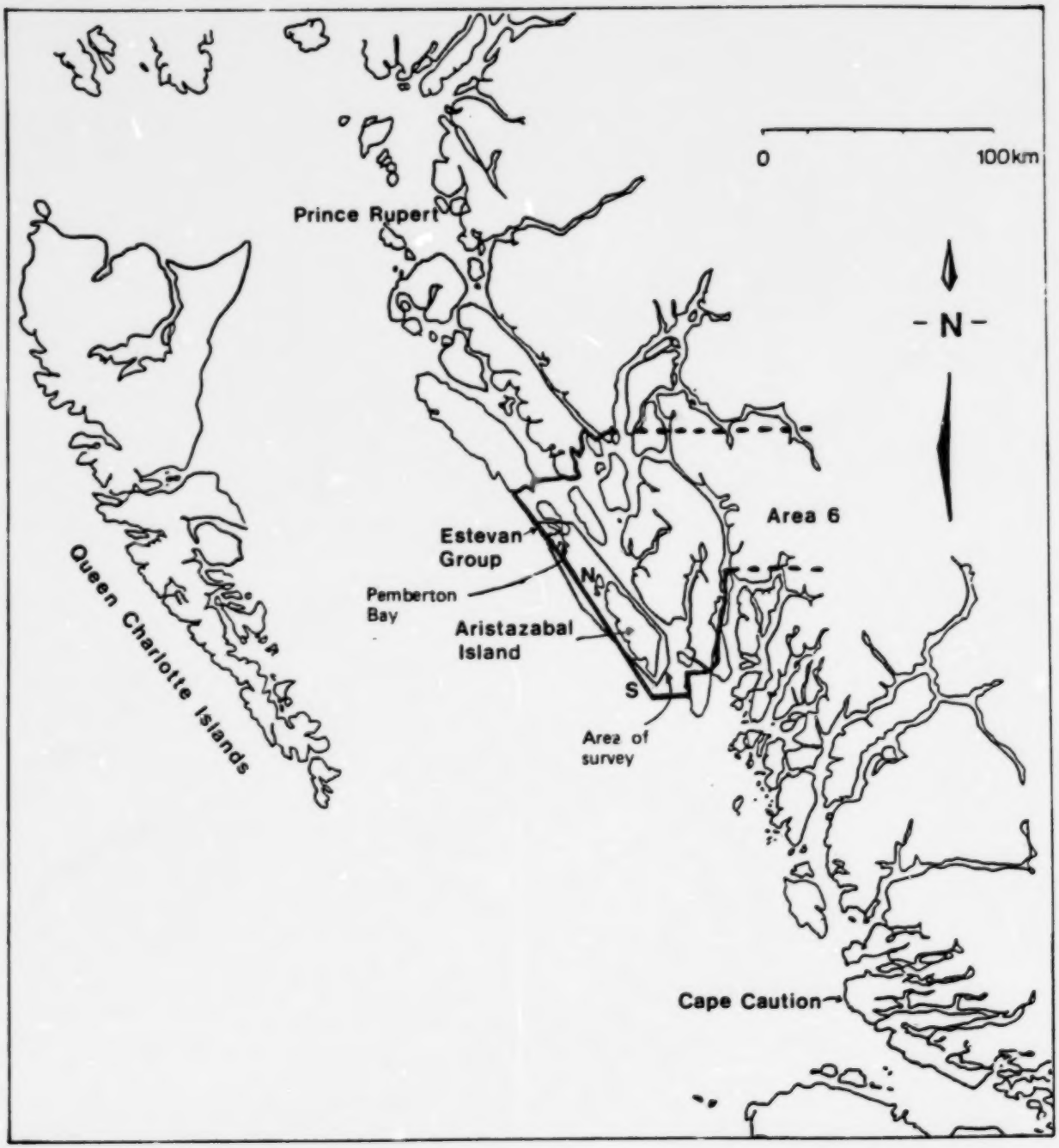


Fig. 1. North Coast of British Columbia showing the area of survey.

Most selected sites were those that had shown a high abalone density during the 1983 survey. In addition, three new sites were examined. When locating old sites, the diving teams relied on working charts from the 1983 survey and tne experience of the two returning divers.

Sampling procedures followed those of Breen and Adkins (1979). Topography, substrate type, exposure and dominant algae were identified, and percent cover of algae was estimated. The density of abalone was estimated by collecting all abalone in a meter quadrat in a 16 quadrat pattern and measuring shell length to the nearest mm. For further description of methods see Breen and Adkins (1979). All abalone were counted including those under rocks and shelves.

RESULTS

Of the 28 sites surveyed, 25 were considered suitable for data comparison with previous surveys. Appendix 1 contains site characteristics and abalone density data for each site sampled in 1985.

LEGAL DENSITIES

Densities of legal size abalone (shell length > 100 mm) in 1983 and 1985 are compared in Table 1. An increase in legal density was observed in 12 out of the 25 sites surveyed. All areas showed an increase in average number of legal size abalone per square meter, with the overall mean for the 25 compared sites increasing from 0.23 in 1983 to 0.35 in 1985. A sign test supports this overall increase of 52.2% from 1983 to 1985. Using only the 11 sites common to the three surveys (1979-80, 1983, 1985), the 1985 legal size density has increased by less than 1% from 1983 and decreased by 0.24% from 1979/80 (Table 2).

TOTAL DENSITIES

Comparisons between 1983 and 1985 of mean total densities where abalone of all sizes were included, were made using a paired t-test (Table 3). Fourteen of the 25 sites showed an increase in mean total density, with apparent decreases observed in the northern areas and increases observed in the Aristazabal Island sites. In 1985, the total mean density for the area surveyed was 1.57 abalone per square meter compared to 1.43 abalone per square meter observed for the same sites in 1983.

RECRUIT AND PRE-RECRUIT DENSITIES

A comparison of densities of pre-recruits that will enter the fishery in the next 12 months (94-101 mm) and new recruits that have entered the fishery in the last 12 months (102-107 mm) showed a non-significant increase from 1983 to 1985 (Table 4) in each of the areas surveyed. In the 11 sites common to all three surveys, density of pre-recruits declined by 3% from 1983 to 1985 while density of recruits increased by 5.3% (Table 5). These differences were not significant according to the sign test.

LENGTHS

Mean abalone lengths were greater in 1985 compared to 1983 in all surveyed areas except Aristazabal Island North (Table 6). Length frequencies (Figs. 2-6)

TABLE 1. LEGAL DENSITIES (#/M2) OF ABALONE AT SITES RESURVEYED, 1979-80, 1983, 1985. ('+' INDICATES INCREASE, '-VE' INDICATES DECREASE).

1985 SITE	1983 SITE	1979-80 SITE	LEGAL DENSITY (#/M2) 1985	1983	1979-80	CHANGE 1983-85	1979-85
ESTEVAN SOUTH							
21	21	79-18	0.94	0.44	0.84	+	+
22	22	79-20	0.19	0.31	0.23	-VE	-VE
23	23	79-08	0.12	0.25	0.78	-VE	-VE
24	24	79-09	0.31	0.00	0.27	+	+
25	25	80-70	0.31	0.38	0.44	-VE	-VE
27	27	80-06	0.25	0.13	0.13	+	+
29	29	-	0.65	0.31	-	+	
30	30	-	1.44	0.88	-	+	
ESTEVAN MEAN			0.53	0.34		+	
PEMBERTON							
33	33	-	0.07	0.19	-	-VE	
34	34	-	0.18	0.31	-	-VE	
35	35	-	0.06	0.19	-	-VE	
36	36	80-07	1.00	0.12	1.16	+	-VE
PEMBERTON MEAN			0.33	0.20		+	
ARISTAZABAL NORTH							
13	13	79-27	0.25	0.06	0.48	+	-VE
15	15	79-12	0.12	0.25	0.27	-VE	-VE
16	16	-	0.12	0.06	-	+	
17	17	79-14	0.00	0.00	0.21	0	-VE
19	19	79-11	0.56	0.44	0.55	+	0
20	20	-	0.38	0.31	-	+	
ARISTAZABAL NORTH MEAN				0.24	0.19	+	
ARISTAZABAL SOUTH							
4	4	-	0.06	0.25	-	-VE	
6	6	-	0.00	0.00	-	0	
8	8	-	0.25	0.38	-	-VE	
9	9	-	0.44	0.00	-	+	
10	10	-	1.06	0.19	-	+	
11	11	-	0.00	0.06	-	-VE	
12	12	-	0.19	0.25	-	-VE	
ARISTAZABAL SOUTH MEAN				0.29	0.16	+	

TABLE 2. CHANGES IN LEGAL ABALONE DENSITY(#/M2) USING ONLY 11 SITES COMPARABLE AMONG ALL SURVEYS.

YEARS	T-TEST	SIGN	TEST
79-83	P=.03	-45%	P=.01
83-85	NS	+.68%	NS
79-85	NS	-.24%	NS

TABLE 3. TOTAL ABALONE DENSITIES IN COMPARABLE SITES IN 1983 AND 1985 SURVEYS.

1985 SITE	1983 SITE	TOTAL DENSITY(#/M2) 1985	1983	CHANGE	P-
ESTEVAN SOUTH					
21	21	1.31	1.44	-.13	0.5448
22	22	0.62	0.62	0.00	1.00
23	23	2.50	2.56	-.06	0.8349
24	24	0.88	0.69	0.19	0.106
25	25	1.12	1.75	-.62	0.0002
27	27	0.62	0.38	0.24	0.0086
29	29	2.00	2.06	-.06	0.7967
30	30	2.88	4.69	-1.82	0.00
ESTEVAN MEAN		1.49	1.77	-.28	0.41
PEMBERTON					
33	33	0.87	1.75	-.88	0.00
34	34	1.00	2.38	-1.38	0.00
35	35	1.56	3.31	-1.75	0.0001
36	36	3.38	1.63	1.75	0.00
PEMBERTON MEAN		1.70	2.27	-.56	0.00
ARISTAZABAL NORTH					
13	13	2.19	0.56	1.63	0.00
15	15	1.19	1.06	0.13	0.6041
16	16	1.31	0.38	0.93	0.00
17	17	2.31	1.75	0.56	0.0178
19	19	1.56	1.06	0.50	0.0099
20	20	0.81	0.38	0.43	0.0001
ARISTAZABAL N.MEAN		1.56	0.86	0.70	0.11
ARISTAZABAL SOUTH					
4	4	0.25	0.50	-.25	0.0005
6	6	0.25	1.06	-.81	0.00
8	8	2.81	2.31	0.50	0.1583
9	9	1.06	0.88	0.18	0.2181
10	10	4.12	1.00	3.12	0.00
11	11	1.88	0.81	1.06	0.00
12	12	1.06	0.69	0.37	0.0021
ARISTAZABAL S.MEAN		1.63	1.04	0.60	0.05
TOTAL		1.57	1.43	0.06	0.00

TABLE 4. COMPARISON OF PRE-RECRUIT (94-101 mm) AND RECRUIT (102-107 mm) ABALONE DENSITIES IN 1983 AND 1985 SURVEYS.

	ESTEVAN SOUTH	PEMBERTON	ARISTAZABAL NORTH	ARISTAZABAL SOUTH
PRE-RECRUIT (94-101 mm)				
1985	0.320	0.237	0.146	0.277
1983	0.242	0.234	0.099	0.152
CHANGE				
RECRUIT (102-107 mm)				
1985	0.195	0.154	0.083	0.125
1983	0.172	0.109	0.052	0.045
CHANGE	+	+	+	+
DIFFERENCE	NS(P=.05)	NS(P=.05)	NS(P=.05)	NS(P=.05)

TABLE 5. COMPARISON OF PRE-RECRUIT (94-101 mm) AND RECRUIT (102-107 mm) ABALONE DENSITIES IN 11 COMPARABLE SITES FOR ALL SURVEYS.

YEAR OF SURVEY	ABALONE DENSITY(#/M2) 94-101 mm	102-107 mm
1985	0.20	0.16
1983	0.23	0.11
1979-80	0.46	0.25
	% CHANGE	
83-85	-3.00	5.30
79/80-85	-56.50	-35.00
79/80-83	-50.00	-56.00

TABLE 6. MEAN ABALONE LENGTHS FROM 1983 AND 1984 SURVEYS IN THE CENTRAL COAST, B.C.

	1985 LENGTH (MM)	1983 LENGTH (MM)	CHANGE[a]
ESTEVAN	90.37	83.80	6.57 *
PEMBERTON BAY	81.79	77.71	4.08 *
ARISTAZABAL N.	76.89	81.09	-4.20 *
ARISTAZABAL S.	82.43	79.88	2.55 *
TOTAL	83.42	81.06	2.36 *

[a] *INDICATES SIGNIFICANCE AT P = .05

TABLE 7. POUNDS OF ABALONE LANDED AND PERCENT OF QUOTA TAKEN FROM CENTRAL COAST, B.C., 1979-1984[a,b]

	WEIGHT(LB)	PERCENT
1979	45605	48.0
1980	21322	45.5
1981	18184	42.8
1982	13190	35.4
1983	4952	19.5
1984	4490	17.3

[a] AVAILABLE HARVEST DATA FOR 1985 SHOW >30% CONTRIBUTION FROM THE CENTRAL COAST.

[b] AREA 6 IS THE MAJOR HARVEST AREA FOR ABALONE IN CENTRAL COAST.

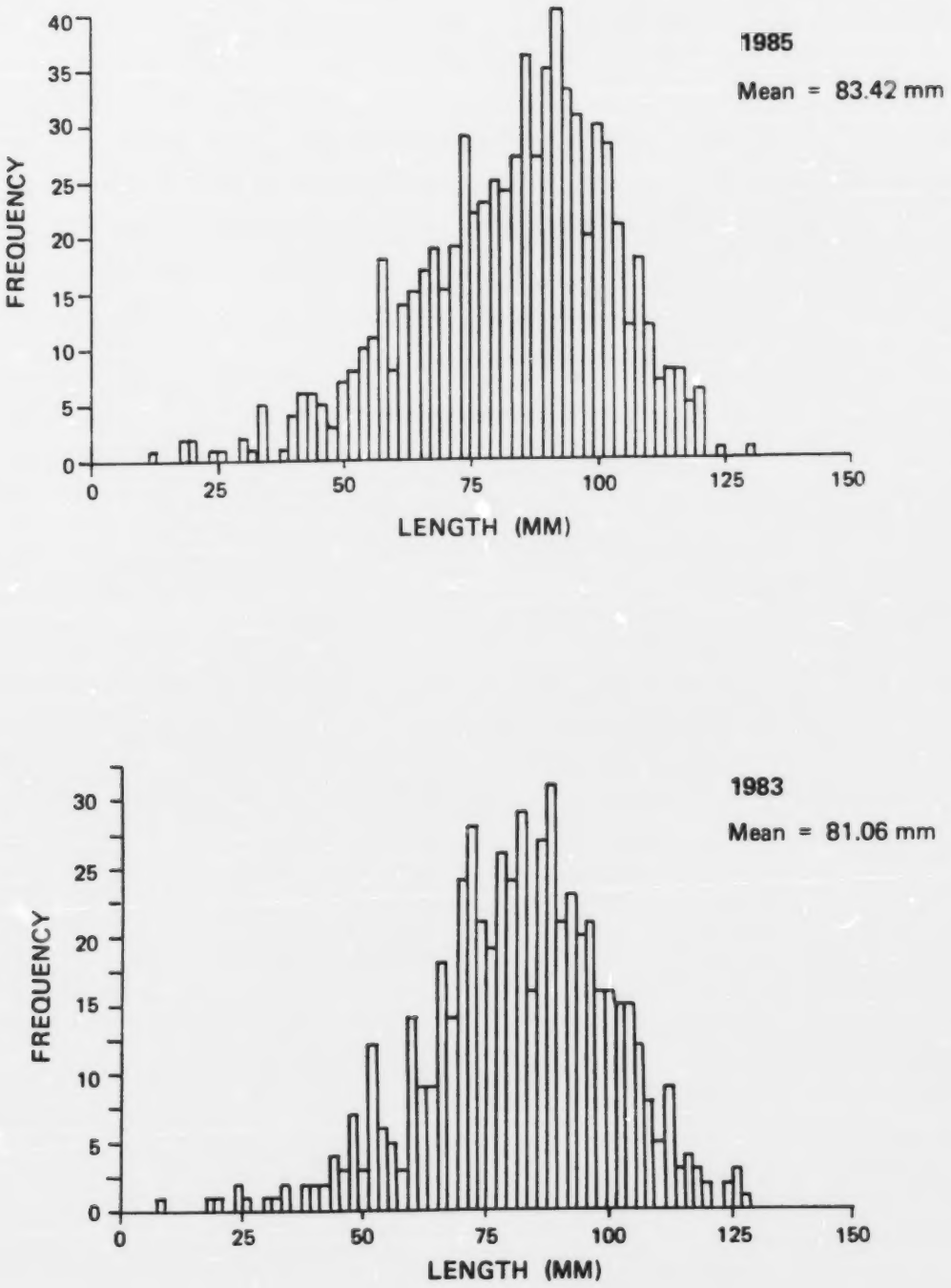
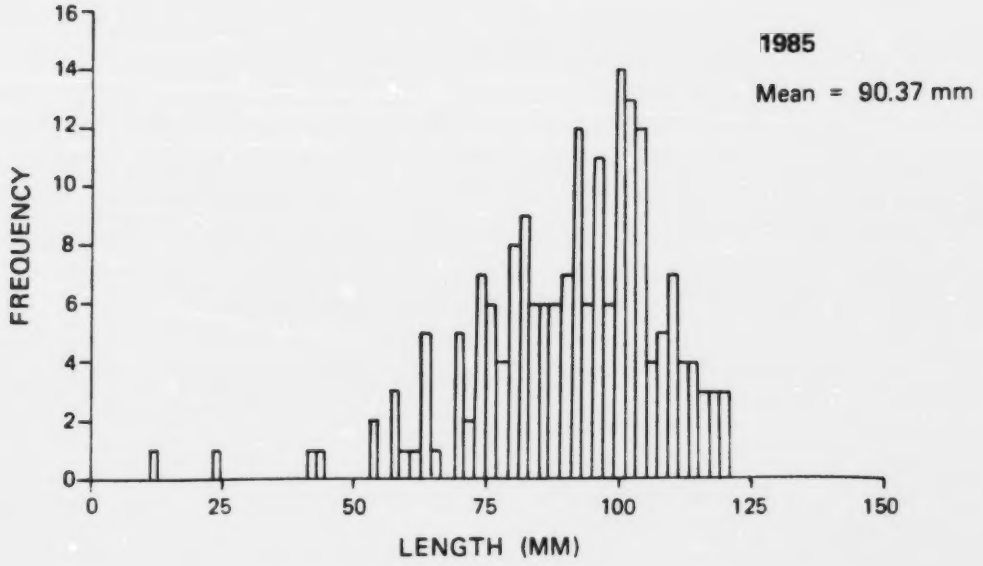


Fig. 2. Length frequencies of abalone collected at all sites, Estevan Group, Pemberton and Aristazabal Island, 1983, 1985.



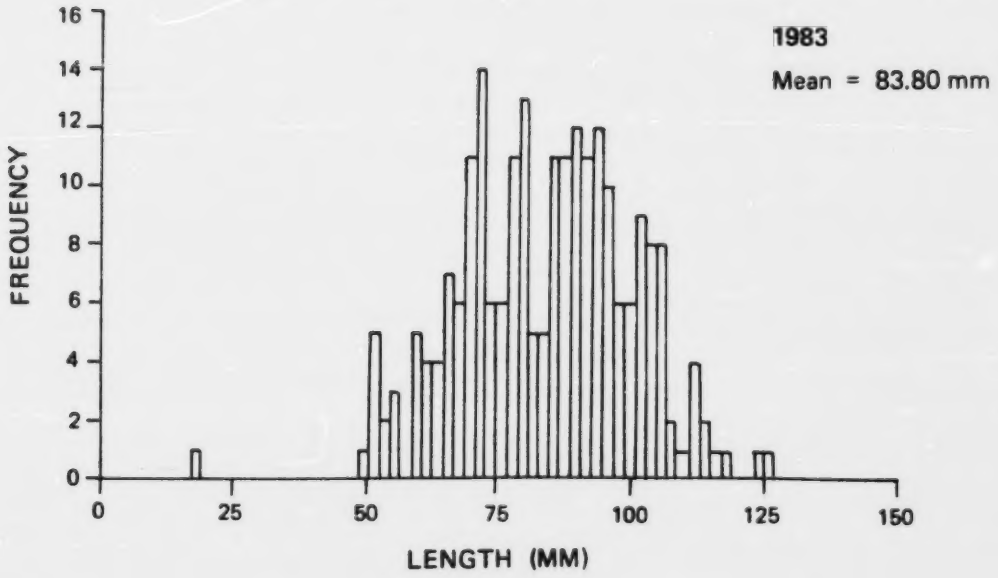
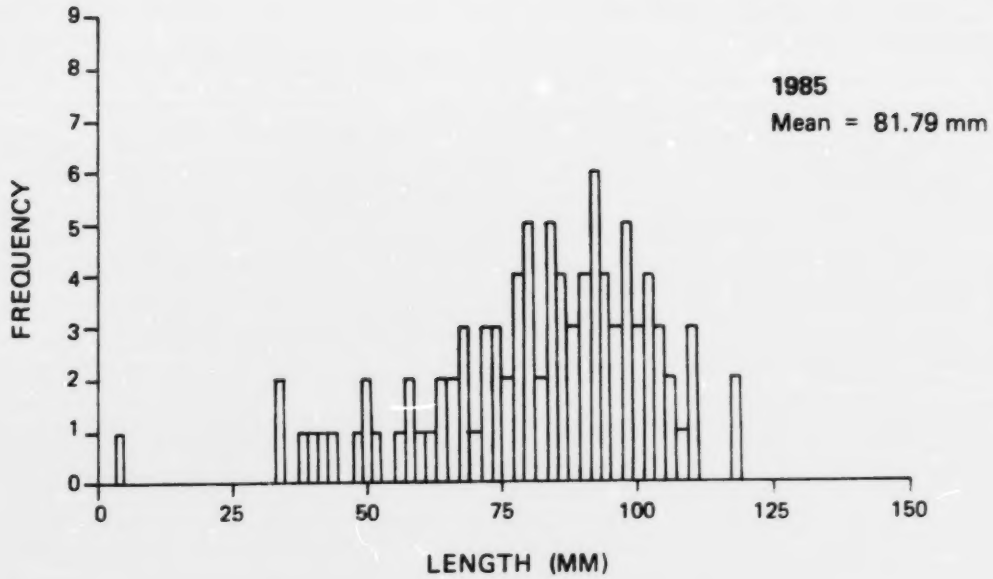


Fig. 3. Length frequencies of abalone collected at sites 21 - 30, Estevan South, 1983, 1985.



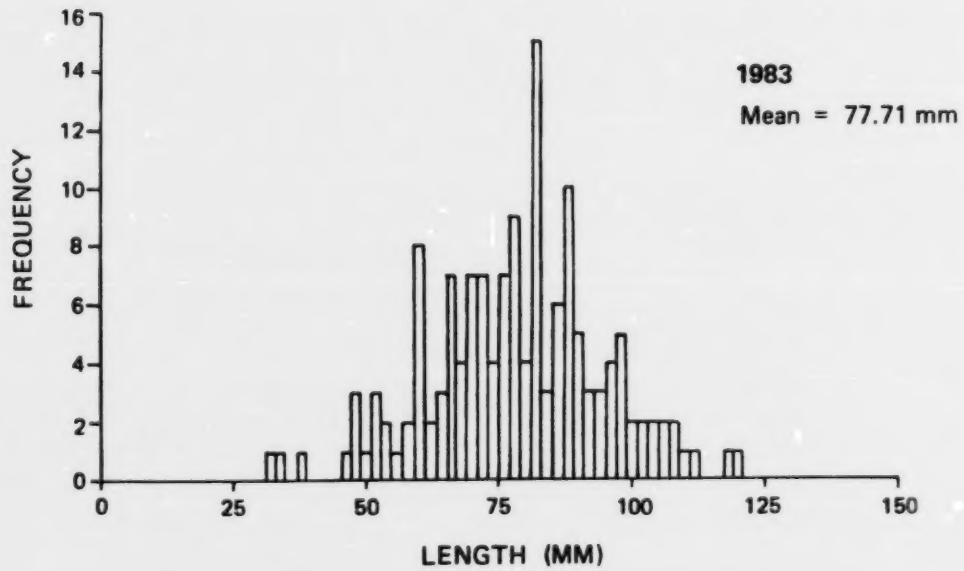
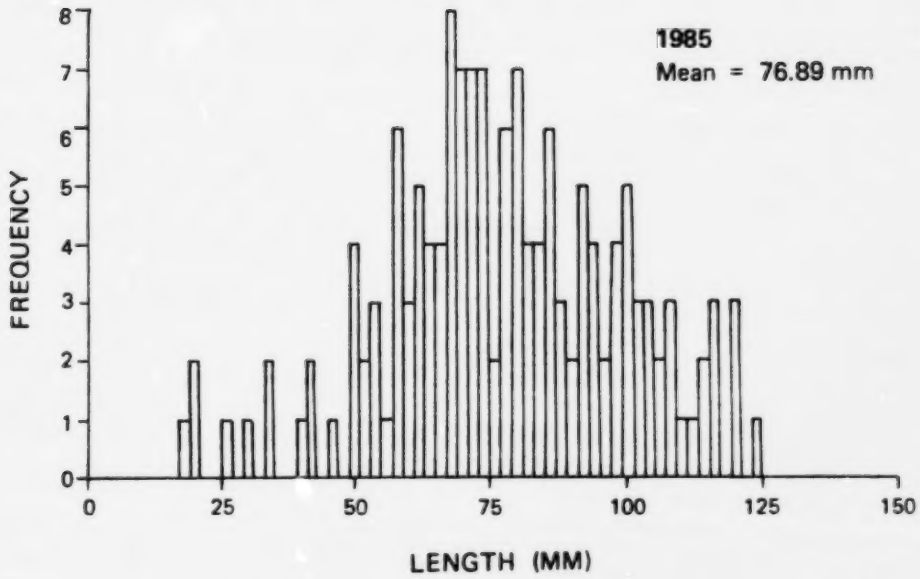


Fig. 4. Length frequencies of abalone collected at sites 33 - 36, Pemberton Bay, 1983, 1985.



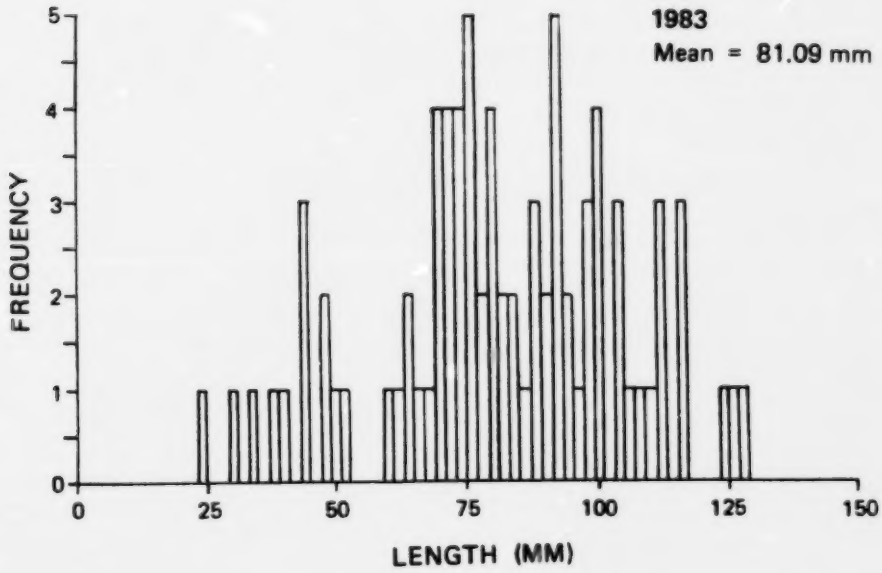


Fig. 5. Length frequencies of abalone collected at sites 13 - 20, Aristazabal North, 1983, 1985.

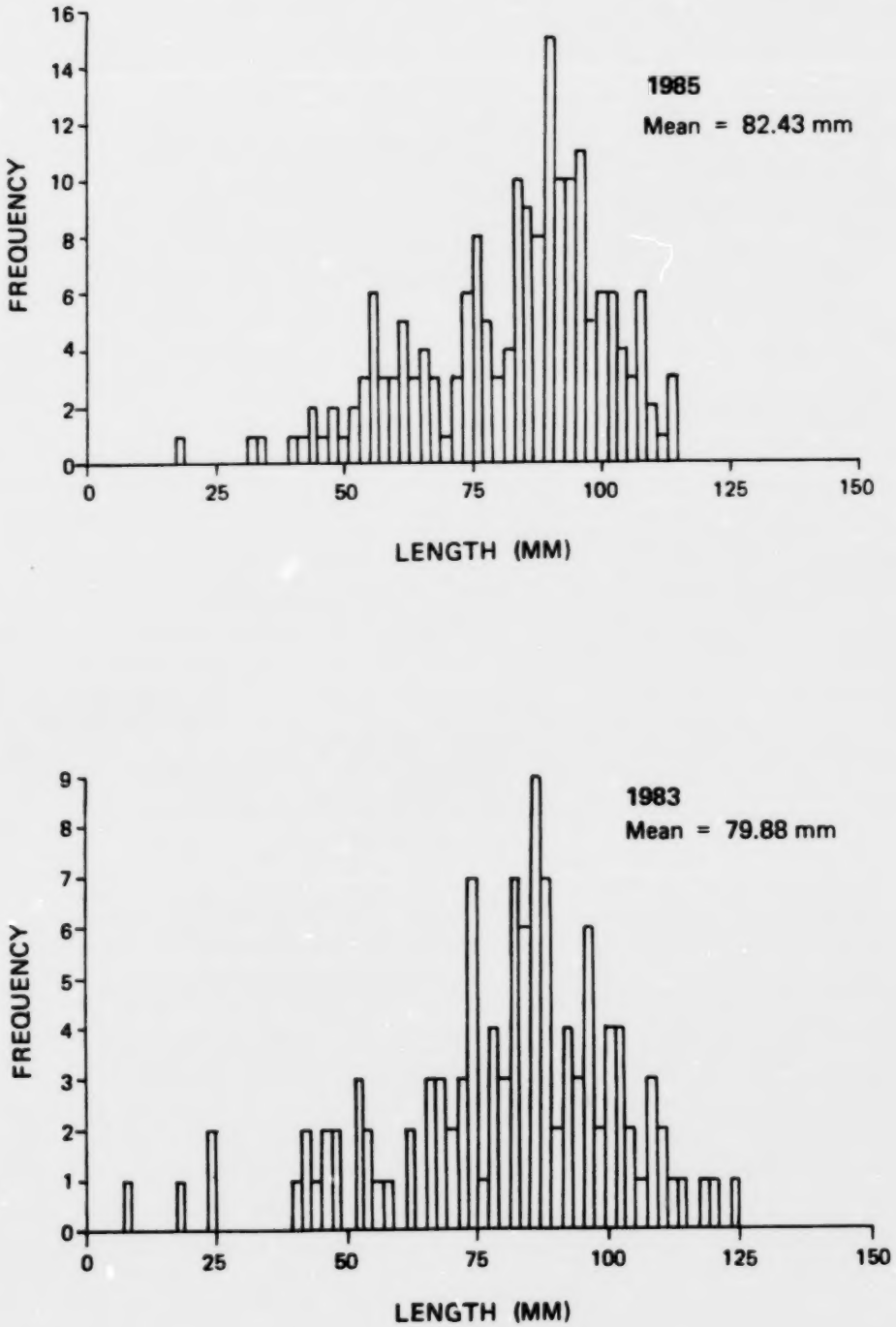


Fig. 6. Length frequencies of abalone collected at sites 4 - 12, Aristazabal South, 1983, 1985.

for each area support these results. Some change in abalone length with time is consistent with expected growth and natural mortality over the interim; however, there was no apparent decrease in the density of pre-recruits indicating that they have been replaced. An increase in the number of legal size abalone does not support the argument for overharvesting.

DISCUSSION

The 1985 survey indicated some increase in both legal and total abalone densities in the areas surveyed. All sites used for comparison are within Area 6 (in Central Coast) which is also the major commercial abalone fishing area in British Columbia. While Area 6 has been a major producer of abalone for the fishery, a reduction in fishing effort as reflected by catch has occurred there in 1983 and 1984 (Table 7). As only 19.5% of the 1983 B.C. quota and 17.3% of the 1984 B.C. quota came from the Central Coast, it is unlikely that this harvest has had a substantial effect on the overall abalone abundance in that area.

Pre-recruit and new recruit abalone densities have essentially not changed since 1983.

While it is too early to assume that a reasonable quota (fishing rate) has been reached, it is encouraging to report the first survey on record which does not document a considerable decline in abalone abundance. However, there is no evidence that recruitment success has increased.

MANAGEMENT FOR 1986 SEASON

General management considerations include the results of this survey, the results of commercial catch sampling, and anecdotal reports of fishermen. Catch per unit effort has been examined as a potential indicator of abalone abundance, but to date has been considered as unreliable for this purpose because of inconsistency in diving personnel and the learning time required for commercial divers to achieve maximum harvest production.

Commercial catch sampling (Table 8) indicates that we are not fishing down to the size limit of shell length of 100 mm. This is indicated by the fact that the overall average sampling length of abalone during 1982 - 1985 was 112.4 mm (Table 8), which is well above the 106 mm expected if the yearly growth increments average 6% (Breen MS 1983). The present survey indicates no change or a possible increase in abalone abundance. On the basis of this information, the management plan for 1986 includes retaining the 4,000 lb (1,814 kg) per licence and 104,000 lb (47,173 kg) total quota from 1985.

ACKNOWLEDGEMENTS

The authors would like to thank Rob Harrington, Greg Thomas and the crew of the "Babine Post". We are also grateful to the DFO-SEP Word Processing Centre for correcting the drafts and to Alice Fedorenko for drafting the figures, editing the report and preparing it for publication.

TABLE 8. ABALONE PORT SAMPLING SUMMARY, PRINCE RUPERT, B.C., 1982-1985.

DATE	STATISTICAL AREA OF FISHING	SAMPLE SIZE #	AVERAGE LENGTH(mm)	STANDARD DEVIATION	% LEGAL SIZE
OCT. 1982	6	292	115.41	9.44	NOT AVAILABLE
DEC. 1982	6	370	115.84	21.73	99.73
FEB. 1983	6	137	106.74	5.65	96.35
MAR. 1983	6	125	109.78	6.39	97.60
DEC. 1984	6	117	109.81	8.00	100.00
		104	106.25	18.14	96.15
SAMPLE TOTAL		221	108.14	6.98	98.19
DEC. 1984	6	48	113.33	9.60	100.00
DEC. 1984	1	99	110.10	8.18	95.96
		88	112.11	8.44	100.00
SAMPLE TOTAL		187	111.05	8.34	97.86
DEC. 1984	6	28	114.96	7.46	100.00
		25	112.44	7.10	100.00
		27	110.15	7.76	96.30
SAMPLE TOTAL		80	112.55	7.63	98.75
FEB. 1984	5	10	117.40	7.12	100.00
		10	113.20	7.41	100.00
		10	113.10	7.94	100.00
		10	113.50	10.17	100.00
SAMPLE TOTAL		40	114.30	8.13	100.00
APR. 1985	1	35	114.66	9.80	100.00
		30	110.07	9.45	100.00
SAMPLE TOTAL		65	112.54	9.84	100.00
GRAND TOTAL		1565	-	-	-
OVERALL AVERAGE		87	112.40	13.08	98.59

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APPENDIX 1. SITE CHARACTERISTICS AND ABALONE DENSITY DATA FROM ABALONE SURVEY, B.C., 1985

Description of terms used:

DEPTH - All depths given in meters

EXPOSURE - Types of exposure

GR. SW.	Ground swell only
GROUND SWELL	Ground swell only
HI	High Tide Surge only
MOD	Moderate Exposure
MOD. EX.	Moderate Exposure
TIDAL	Tidal Current

SUBSTRATE - Types of Substrate

BED	Bedrock
BO	Boulders
CO	Cobble
S	Sand
SA	Sand
SAND	Sand

SPECIES OF SEAWEEDS

CANOPY

MACRO	Macrocystis integrifolia
NEREO	Nereocystis luetkeana
NEREOCYSTIS	Nereocystis luetkeana

BOTTOM

ALARIA	Alaria sp.
DESM	Desmarestia sp.
COSTARIA	Costaria costata
EGREGIA	Egregia menziesii
GREEN FILAME	Green algae-filamentous
LAM	Laminaria sp.
LAMINARIA	Laminaria sp.
PHYLLOSPADIX	Phyllospadix sp.
PTERO	Pterogophora californica

TURF

CORAL	Articulated corallines
CORALLINE	Articulated corallines
ULVA	Ulva sp.
CODIUM	Codium sp.
HEDOPHYLLUM	Hedophyllum sessile
DESM	Desmarestia sp.
COSTARIA	Costaria costata
PHYLLOSPADIX	Phyllospadix sp.
GREEN FILAME	Green algae-filamentous

ROCK

CODIUM	Codium sp.
DIATOMS	Diatoms - unknown
LITHO	Lithothamnion sp.

DIVING STATION LOG

SITE: 1 DIVERS: K R
LOCATION: IVORY ISLAND
DATE: 85/06/18 TIME: 3:28 PM
TIDE DEPTH: 3.6 DEPTH-MIN: -2.5 MAX: 0.7
EXPOSURE: HI SUBSTRATE: BED/BO
SLOPE (Deg.): 10

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	10	:	-
BOTTOM:	COSTARIA	30	: LAMINARIA	20
TURF :		-	:	-
ROCK :	LITHO	60	:	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	0
ABALONE	3	4
ABALONE	4	0
ABALONE	5	2
ABALONE	6	6
ABALONE	7	9
ABALONE	8	0
ABALONE	9	2
ABALONE	10	1
ABALONE	11	6
ABALONE	12	0
ABALONE	13	0
ABALONE	14	2
ABALONE	15	8
ABALONE	16	3

DIVING STATION LOG

SITE: 2 DIVERS: R K
LOCATION: PIDWELL REEF
DATE: 85/06/19 TIME: 7:30 AM
TIDE DEPTH: 0.8 DEPTH-MIN: -0.5 MAX: 0.5
EXPOSURE: HI SUBSTRATE: BED/BO
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	LAMINARIA	40	: -	-
TURF :	CORALLINE	25	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	5
ABALONE	2	2
ABALONE	3	0
ABALONE	4	0
ABALONE	5	1
ABALONE	6	0
ABALONE	7	0
ABALONE	8	0
ABALONE	9	3
ABALONE	10	0
ABALONE	11	0
ABALONE	12	0
ABALONE	13	1
ABALONE	14	0
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 4 DIVERS: K G
LOCATION: WEETEEAM BAY
DATE: 85/06/17 TIME: 2:05 PM
TIDE DEPTH: 3.8 DEPTH-MIN: 0.2 MAX: 1.1
EXPOSURE: MOD. EX. SUBSTRATE: BO / BED
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	DESM	40	: -	-
TURF :	CORAL	20	: -	-
ROCK :	LITHO	70	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	0
ABALONE	3	0
ABALONE	4	0
ABALONE	5	0
ABALONE	6	0
ABALONE	7	1
ABALONE	8	0
ABALONE	9	2
ABALONE	10	1
ABALONE	11	0
ABALONE	12	0
ABALONE	13	0
ABALONE	14	0
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 6 DIVERS: -
LOCATION: WEETEEAM BAY
DATE: 85/06/17 TIME: 3:00 PM
TIDE DEPTH: 3.7 DEPTH-MIN: -1.2 MAX: 1.5
EXPOSURE: GR. SW. SUBSTRATE: BED
SLOPE (Deg.): 60

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	10	: -	-
BOTTOM:	ALARIA	60	: -	-
TURF :	CORAL	40	: -	-
ROCK :	LITHO	100	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	0
ABALONE	3	0
ABALONE	4	0
ABALONE	5	0
ABALONE	6	0
ABALONE	7	2
ABALONE	8	0
ABALONE	9	0
ABALONE	10	0
ABALONE	11	0
ABALONE	12	0
ABALONE	13	0
ABALONE	14	0
ABALONE	15	0
ABALONE	16	2

DIVING STATION LOG

SITE: 8 DIVERS: K R
LOCATION: WEETEEAM BAY
DATE: 85/06/17 TIME: 9:03 AM
TIDE DEPTH: 1.2 DEPTH-MIN: -0.6 MAX: 2.7
EXPOSURE: MOD. EX. SUBSTRATE: BED
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	ALARIA	30	: DESM	10
TURF :	CORAL	10	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	12
ABALONE	2	8
ABALONE	3	2
ABALONE	4	0
ABALONE	5	1
ABALONE	6	2
ABALONE	7	6
ABALONE	8	5
ABALONE	9	3
ABALONE	10	3
ABALONE	11	0
ABALONE	12	0
ABALONE	13	2
ABALONE	14	0
ABALONE	15	0
ABALONE	16	1

DIVING STATION LOG

SITE: 9 DIVERS: K R
LOCATION: WEETEEAM BAY
DATE: 85/06/17 TIME: 10:15 AM
TIDE DEPTH: 2.6 DEPTH-MIN: -0.2 MAX: 0.2
EXPOSURE: MOD. EX. SUBSTRATE: BED / BO / SAND
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	MACRO	100	: -	-
BOTTOM:	LAM	30	: EGREGIA	10
TURF :	CORAL	70	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	1
ABALONE	2	3
ABALONE	3	5
ABALONE	4	6
ABALONE	5	0
ABALONE	6	1
ABALONE	7	0
ABALONE	8	1
ABALONE	9	0
ABALONE	10	0
ABALONE	11	0
ABALONE	12	0
ABALONE	13	0
ABALONE	14	0
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 10 DIVERS: G R
LOCATION: PRIOR PASS
DATE: 85/06/18 TIME: 11:25 AM
TIDE DEPTH: 2 DEPTH-MIN: -1 MAX: 1.4
EXPOSURE: HI SUBSTRATE: BED / BO / CO
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	10	: -	-
BOTTOM:	ALARIA	20	: -	-
TURF :	-	-	: -	-
ROCK :	LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	2
ABALONE	3	19
ABALONE	4	14
ABALONE	5	2
ABALONE	6	3
ABALONE	7	6
ABALONE	8	3
ABALONE	9	4
ABALONE	10	2
ABALONE	11	0
ABALONE	12	3
ABALONE	13	0
ABALONE	14	2
ABALONE	15	1

DIVING STATION LOG

SITE: 11 DIVERS: R G
LOCATION: PRIOR PASS
DATE: 85/06/18 TIME: 9:10 AM
TIDE DEPTH: .8 DEPTH-MIN: -.5 MAX: .7
EXPOSURE: HI SUBSTRATE: BED
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	60	: -	-
BOTTOM:	ALARIA	60	: -	-
TURF	: -	-	: -	-
ROCK	: LITHO	100	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	4
ABALONE	2	1
ABALONE	3	2
ABALONE	4	7
ABALONE	5	0
ABALONE	6	1
ABALONE	7	0
ABALONE	8	5
ABALONE	9	0
ABALONE	10	2
ABALONE	11	5
ABALONE	12	0
ABALONE	13	2
ABALONE	14	1
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 12 DIVERS: GR
LOCATION: PRIOR PASS
DATE: 85/06/18 TIME: 10:11 AM
TIDE DEPTH: 1.1 DEPTH-MIN: -.5 MAX: 1.6
EXPOSURE: HI SUBSTRATE: BED / BO
SLOPE (Deg.): 30

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	ALARIA	10	: COSTARIA	10
TURF :	-	-	: -	-
ROCK :	LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	0
ABALONE	3	0
ABALONE	4	1
ABALONE	5	1
ABALONE	6	1
ABALONE	7	1
ABALONE	8	1
ABALONE	9	0
ABALONE	10	0
ABALONE	11	0
ABALONE	12	1
ABALONE	13	3
ABALONE	14	1
ABALONE	15	5
ABALONE	16	0

DIVING STATION LOG

SITE: 13 DIVERS: K R
LOCATION: ANDERSON ISLETS
DATE: 85/06/15 TIME: 11:20 AM
TIDE DEPTH: 3.4 DEPTH-MIN: -.4 MAX: 3.9
EXPOSURE: MOD SUBSTRATE: BED / BO / COB / SAND
SLOPE (Deg.): 30

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	-	-	: -	-
TURF :	CODIUM	10	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	3
ABALONE	3	1
ABALONE	4	0
ABALONE	5	0
ABALONE	6	0
ABALONE	7	0
ABALONE	8	0
ABALONE	9	2
ABALONE	10	12
ABALONE	11	0
ABALONE	12	1
ABALONE	13	2
ABALONE	14	0
ABALONE	15	6
ABALONE	16	6

DIVING STATION LOG

SITE: 15 DIVERS: K R
LOCATION: ANDERSON ISLETS
DATE: 85/06/15 TIME: 12:40 PM
TIDE DEPTH: 3.7 DEPTH-MIN: -1.2 MAX: 2.1
EXPOSURE: MOD SUBSTRATE: BED / BO / COB
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	COSTARIA	30	: GREEN FILAMENTOUS	20
TURF :	ULVA	10	: -	-
ROCK :	LITHO	40	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	0
ABALONE	3	8
ABALONE	4	2
ABALONE	5	0
ABALONE	6	0
ABALONE	7	0
ABALONE	8	0
ABALONE	9	2
ABALONE	10	2
ABALONE	11	0
ABALONE	12	0
ABALONE	13	1
ABALONE	14	1
ABALONE	15	0
ABALONE	16	3

DIVING STATION LOG

SITE: 16 DIVERS: R K
LOCATION: ANDERSON ISLETS
DATE: 85/06/15 TIME: 1:30 PM
TIDE DEPTH: 3.6 DEPTH-MIN: -.5 MAX: 3.7
EXPOSURE: HI SUBSTRATE: BED
SLOPE (Deg.): 30

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	DESM	20	: COSTARIA	10
TURF	: -	-	: -	-
ROCK	: LITHO	10	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	0
ABALONE	3	1
ABALONE	4	0
ABALONE	5	5
ABALONE	6	1
ABALONE	7	3
ABALONE	8	0
ABALONE	9	0
ABALONE	10	0
ABALONE	11	3
ABALONE	12	0
ABALONE	13	4
ABALONE	14	1
ABALONE	15	0
ABALONE	16	1

DIVING STATION LOG

SITE: 17 DIVERS: K G
LOCATION: BORROWMAN BAY
DATE: 85/06/16 TIME: 9:22 AM
TIDE DEPTH: 1.9 DEPTH-MIN: .2 MAX: 1.2
EXPOSURE: HI SUBSTRATE: BED / BO
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	DESM	10	: COSTARIA	10
TURF	: -	-	: -	-
ROCK	: LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	5
ABALONE	2	0
ABALONE	3	1
ABALONE	4	4
ABALONE	5	2
ABALONE	6	2
ABALONE	7	0
ABALONE	8	2
ABALONE	9	1
ABALONE	10	1
ABALONE	11	4
ABALONE	12	1
ABALONE	13	6
ABALONE	14	2
ABALONE	15	0
ABALONE	16	6

DIVING STATION LOG

SITE: 18B
LOCATION: BORROWMAN BAY
DATE: 85/06/16
TIDE DEPTH: 2.4
EXPOSURE: HI
SLOPE (Deg.): 10

DIVERS: G K
TIME: 10:17 AM
DEPTH-MIN: .9
MAX: 3.9
SUBSTRATE: BED / BO

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	DESM	40	: -	-
TURF :	-	-	: -	-
ROCK :	LITHO	70	: DIATOMS	30

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	1
ABALONE	2	0
ABALONE	3	0
ABALONE	4	0
ABALONE	5	2
ABALONE	6	0
ABALONE	7	1
ABALONE	8	1
ABALONE	9	2
ABALONE	10	1
ABALONE	11	5
ABALONE	12	0
ABALONE	13	0
ABALONE	14	0
ABALONE	15	1
ABALONE	16	1

DIVING STATION LOG

SITE: 19 DIVERS: G R
LOCATION: KETTLE INLET
DATE: 85/06/16 TIME: 1:40 PM
TIDE DEPTH: 3.6 DEPTH-MIN: -.2 MAX: .7
EXPOSURE: HI SUBSTRATE: BO
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	MACRO	60	: -	-
BOTTOM:	LAMINARIA	50	: DESM	20
TURF :	CORAL	20	: ULVA	40
ROCK :	LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	3
ABALONE	3	0
ABALONE	4	5
ABALONE	5	0
ABALONE	6	7
ABALONE	7	1
ABALONE	8	0
ABALONE	9	0
ABALONE	10	1
ABALONE	11	0
ABALONE	12	1
ABALONE	13	1
ABALONE	14	0
ABALONE	15	5
ABALONE	16	1

DIVING STATION LOG

SITE: 20
LOCATION: KETTLE INLET
DATE: 85/06/16
TIDE DEPTH: 3.1
EXPOSURE: HI
SLOPE (Deg.): 0

DIVERS: -
TIME: 3:10 PM
DEPTH-MIN: 0 MAX: .6
SUBSTRATE: BO / CO / SAND

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	MACRO	80	: -	-
BOTTOM:	LAM	10	: -	-
TURF :	CORAL	60	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	0
ABALONE	3	0
ABALONE	4	2
ABALONE	5	1
ABALONE	6	0
ABALONE	7	1
ABALONE	8	2
ABALONE	9	0
ABALONE	10	0
ABALONE	11	2
ABALONE	12	0
ABALONE	13	0
ABALONE	14	2
ABALONE	15	0
ABALONE	16	3

DIVING STATION LOG

SITE: 21 DIVERS: G R
LOCATION: HICKEY ISLAND
DATE: 85/06/13 TIME: 9:12 AM
TIDE DEPTH: 3.1 DEPTH-MIN: -1.3 MAX: 0.5
EXPOSURE: MOD SUBSTRATE: BED
SLOPE (Deg.): 10

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	30	: -	-
BOTTOM:	ALARIA	40	: DESM	30
TURF :	CORAL	60	: -	-
ROCK :	LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	5
ABALONE	3	2
ABALONE	4	0
ABALONE	5	1
ABALONE	6	1
ABALONE	7	6
ABALONE	8	0
ABALONE	9	0
ABALONE	10	3
ABALONE	11	0
ABALONE	12	0
ABALONE	13	1
ABALONE	14	0
ABALONE	15	2
ABALONE	16	0

DIVING STATION LOG

SITE: 22 DIVERS: G R
LOCATION: HICKEY ISLAND
DATE: 85/06/13 TIME: 10:10 AM
TIDE DEPTH: 3.4 DEPTH-MIN: -.3 MAX: 1.2
EXPOSURE: MOD SUBSTRATE: BED / CO
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	MACRO	60	: NEREO	10
BOTTOM:	LAMINARIA	40	: -	-
TURF :	CORAL	80	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	1
ABALONE	3	0
ABALONE	4	0
ABALONE	5	1
ABALONE	6	1
ABALONE	7	4
ABALONE	8	0
ABALONE	9	0
ABALONE	10	1
ABALONE	11	0
ABALONE	12	0
ABALONE	13	2
ABALONE	14	0
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 23 DIVERS: K R
LOCATION: HICKEY ISLAND
DATE: 85/06/12 TIME: 11:40 AM
TIDE DEPTH: 3 DEPTH-MIN: -.1 MAX: 2.2
EXPOSURE: HI SUBSTRATE: BED / BO
SLOPE (Deg.): 40

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREOCYSTIS	10	: -	-
BOTTOM:	DESM	10	: PHYLLOSPADIX	20
TURF :	CORAL	20	: -	-
ROCK :	LITHO	70	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	1
ABALONE	2	0
ABALONE	3	3
ABALONE	4	3
ABALONE	5	0
ABALONE	6	4
ABALONE	7	17
ABALONE	8	5
ABALONE	9	0
ABALONE	10	0
ABALONE	11	4
ABALONE	12	1
ABALONE	13	1
ABALONE	14	0
ABALONE	15	1
ABALONE	16	0

DIVING STATION LOG

SITE: 24 DIVERS: K R
LOCATION: HICKEY ISLAND
DATE: 86/06/12 TIME: 10:45 AM
TIDE DEPTH: 3.3 DEPTH-MIN: -.9 MAX: 2.8
EXPOSURE: HI SUBSTRATE: BED / BO
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	10	: -	-
BOTTOM:	LAMINARIA	10	: COSTARIA	10
TURF :	PHYLLOSPADIX	10	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	2
ABALONE	3	1
ABALONE	4	0
ABALONE	5	0
ABALONE	6	0
ABALONE	7	0
ABALONE	8	0
ABALONE	9	0
ABALONE	10	3
ABALONE	11	0
ABALONE	12	2
ABALONE	13	0
ABALONE	14	0
ABALONE	15	5
ABALONE	16	1

DIVING STATION LOG

SITE: 25 DIVERS: K R
LOCATION: HICKEY ISLAND
DATE: 85/06/13 TIME: 2:04 PM
TIDE DEPTH: 2.5 DEPTH-MIN: 1.7 MAX: 3
EXPOSURE: TIDAL SUBSTRATE: BO / SAND / GRAV
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	80	: -	-
BOTTOM:	PTERO	70	: -	-
TURF :	CORAL	10	: -	-
ROCK :	LITHO	60	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	1
ABALONE	2	1
ABALONE	3	1
ABALONE	4	2
ABALONE	5	2
ABALONE	6	0
ABALONE	7	0
ABALONE	8	1
ABALONE	9	0
ABALONE	10	0
ABALONE	11	4
ABALONE	12	2
ABALONE	13	1
ABALONE	14	1
ABALONE	15	2
ABALONE	16	0

DIVING STATION LOG

SITE: 27 DIVERS: G R
LOCATION: HICKEY ISLAND
DATE: 85/06/13 TIME: 11:07 AM
TIDE DEPTH: 3.4 DEPTH-MIN: .6 MAX: 1.8
EXPOSURE: MOD SUBSTRATE: CO
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	DESM	40	: -	-
TURF :	ULVA	20	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	0
ABALONE	3	0
ABALONE	4	0
ABALONE	5	0
ABALONE	6	0
ABALONE	7	4
ABALONE	8	1
ABALONE	9	0
ABALONE	10	0
ABALONE	11	0
ABALONE	12	2
ABALONE	13	1
ABALONE	14	0
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 29 DIVERS: K G
LOCATION: LOTBINIERE ISLAND
DATE: 85/06/12 TIME: 2:25 PM
TIDE DEPTH: 2.1 DEPTH-MIN: -.9 MAX: 1.3
EXPOSURE: HI SUBSTRATE: BED
SLOPE (Deg.): 30

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	50	: -	-
BOTTOM:	-	-	: -	-
TURF	: DESM	30	: COSTARIA	10
ROCK	: LITHO	60	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	2
ABALONE	2	4
ABALONE	3	0
ABALONE	4	0
ABALONE	5	4
ABALONE	6	8
ABALONE	7	0
ABALONE	8	0
ABALONE	9	0
ABALONE	10	9
ABALONE	11	1
ABALONE	12	0
ABALONE	13	2
ABALONE	14	2
ABALONE	15	0
ABALONE	16	0

DIVING STATION LOG

SITE: 30 DIVERS: R K
LOCATION: HICKEY ISLAND
DATE: 85/06/13 TIME: 3:17 PM
TIDE DEPTH: 2.4 DEPTH-MIN: -.9 MAX: .1
EXPOSURE: MOD SUBSTRATE: BED
SLOPE (Deg.): 10

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	LAMINARIA	80	: -	-
TURF :	CORAL	10	: -	-
ROCK :	LITHO	70	: CODIUM	10

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	5
ABALONE	2	7
ABALONE	3	4
ABALONE	4	0
ABALONE	5	3
ABALONE	6	2
ABALONE	7	2
ABALONE	8	3
ABALONE	9	1
ABALONE	10	5
ABALONE	11	4
ABALONE	12	1
ABALONE	13	2
ABALONE	14	5
ABALONE	15	0
ABALONE	16	2

DIVING STATION LOG

SITE: 33 DIVERS: K G
LOCATION: PEMBERTON BAY
DATE: 85/06/14 TIME: 10:58 AM
TIDE DEPTH: 3.4 DEPTH-MIN: 1.1 MAX: 2.7
EXPOSURE: MOD SUBSTRATE: BED / BO
SLOPE (Deg.): 20

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREO	50	: -	-
BOTTOM:	ALARIA	80	: -	-
TURF :	GREEN FILAMENTOUS	20	: -	-
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	1
ABALONE	3	1
ABALONE	4	1
ABALONE	5	0
ABALONE	6	0
ABALONE	7	0
ABALONE	8	3
ABALONE	9	0
ABALONE	10	1
ABALONE	11	3
ABALONE	12	1
ABALONE	13	1
ABALONE	14	1
ABALONE	15	0

DIVING STATION LOG

SITE: 34 DIVERS: G R
LOCATION: PEMBERTON BAY
DATE: 85/06/14 TIME: 2:50 PM
TIDE DEPTH: 2.9 DEPTH-MIN: -.1 MAX: .6
EXPOSURE: HI SUBSTRATE: BED
SLOPE (Deg.): 0

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	MACRO	50	: -	-
BOTTOM:	PTERO	40	: LAMINARIA	10
TURF :	CORAL	50	: HEDOPHYLLUM	30
ROCK :	LITHO	80	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	5
ABALONE	3	4
ABALONE	4	3
ABALONE	5	0
ABALONE	6	2
ABALONE	7	0
ABALONE	8	0
ABALONE	9	0
ABALONE	10	0
ABALONE	11	1
ABALONE	12	0
ABALONE	13	0
ABALONE	14	0
ABALONE	15	0
ABALONE	16	1
ABALONE	17	1

DIVING STATION LOG

SITE: 35 DIVERS: G R
LOCATION: PEMBERTON BAY
DATE: 85/06/14 TIME: 4:05 PM
TIDE DEPTH: 2.1 DEPTH-MIN: -.6 MAX: .9
EXPOSURE: HI SUBSTRATE: BED / BO
SLOPE (Deg.): 10

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	-	-	: -	-
BOTTOM:	ALARIA	50	: COSTARIA	10
TURF :	CORAL	50	: -	-
ROCK :	LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	1
ABALONE	3	0
ABALONE	4	1
ABALONE	5	0
ABALONE	6	0
ABALONE	7	0
ABALONE	8	2
ABALONE	9	1
ABALONE	10	4
ABALONE	11	0
ABALONE	12	2
ABALONE	13	5
ABALONE	14	2
ABALONE	15	6
ABALONE	16	1

DIVING STATION LOG

SITE: 36 DIVERS: K G
LOCATION: PEMBERTON BAY
DATE: 85/06/14 TIME: 9:33 AM
TIDE DEPTH: 4.1 DEPTH-MIN: -2.5 MAX: .2
EXPOSURE: GROUND SWELLSUBSTRATE: BED / BO
SLOPE (Deg.): 10

	DOMINANT ALGAE SPECIES NAME	% COVER UP TO	SPECIES NAME	% COVER UP TO
CANOPY:	NEREOCYSTIS	40	: MACRO	30
BOTTOM:	DESM	30	: ALARIA	40
TURF	: CORAL	30	: ULVA	10
ROCK	: LITHO	90	: -	-

SPECIES	QUADRAT NUMBER	SPECIES COUNT
ABALONE	1	0
ABALONE	2	4
ABALONE	3	0
ABALONE	4	4
ABALONE	5	1
ABALONE	6	2
ABALONE	7	1
ABALONE	8	5
ABALONE	9	0
ABALONE	10	2
ABALONE	11	8
ABALONE	12	2
ABALONE	13	0
ABALONE	14	10
ABALONE	15	2
ABALONE	16	13